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Application Number: **10/670,111** File Date: **September 24, 2003**
Title: **SEPARATING FOREIGN OBJECTS FROM A MASS OF COINS**
Our Reference Number: **S247 1020.1**

Submission of Priority Document – Claim of Priority
Certified Copy of British Patent Application No. 0222439.2
Certified Copy of British Patent Application No. 0303434.5
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In Re Application of:

TIMOTHY WILLIAM HILL ET AL.

Serial No.: 10/670,111

Filed: September 24, 2003

Docket No.: S247 1020.1

For: **SEPARATING FOREIGN OBJECTS FROM A MASS OF COINS**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant submits herewith a certified copy of the priority documents in the above case (British Patent Application No. 0222439.2, filed September 27, 2002; and British Patent Application No. 0303434.5, filed February 14, 2003).

Applicant hereby restates its claim of priority and does hereby claim the benefit of the filing date of the above British applications, pursuant to the provisions of 35 U.S.C. § 119.

Applicant courteously requests that the claim of priority and the submitted priority documents be accepted to perfect Applicant's claim of priority.

Respectfully submitted,

26 Oct. 2006
Date

Louis T. Isaf
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- | | | | |
|---|--|---|------------------------------------|
| 1. Your reference | GML2706 | | |
| 2. Patent application number
(The Patent Office will fill in this part) | 0303434.5 | | 14 FEB 2003 |
| 3. Full name, address and postcode of the or
of each applicant (underline all surnames) | SCAN COIN INDUSTRIES AB
Jägershillgatan 26
S-21375 Malmö
Sweden | | |
| Patents ADP number (if you know it) | 8566853001 | | |
| If the applicant is a corporate body, give
the country/state of its incorporation | Sweden | | |
| 4. Title of the invention | SEPARATING FOREIGN OBJECTS FROM A MASS OF
COINS | | |
| 5. Name of your agent (if you have one) | Barker Brettell
Medina Chambers
Town Quay
Southampton SO14 2AQ | | |
| "Address for service" in the United
Kingdom to which all correspondence
should be sent (including the postcode) | | | |
| Patents ADP number (if you know it) | 07442494001 | | |
| 6. If you are declaring priority from one or
more earlier patent applications, give the
country and the date of filing of the or of
each of these earlier applications and (if
you know it) the or each application
number | Country | Priority application number
(if you know it) | Date of Filing
(day/month/year) |
| 7. If this application is divided or otherwise
derived from an earlier UK application, give
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earlier application | Number of earlier application | | Date of filing
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| 8. Is a statement of inventorship and of right
to grant of a patent required in support of
this request (Answer 'Yes' if:
a) any applicant named in part 3 is not an inventor, or
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Description 7
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Priority documents
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Statement of inventorship and right to grant of a patent (Patents Form 7/77)
Request for preliminary examination (Patents Form 9/77)
Request for substantive examination (Patents Form 10/77)
Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date



14.02.2003

Barker Brettell

12. Name and daytime telephone number of person to contact in the United Kingdom

G M Lomas

023 8033 6970

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SEPARATING FOREIGN OBJECTS FROM A MASS OF COINS

The present invention relates to apparatus and method for separating foreign objects from a mass of coins. The invention is concerned with
5 inventive modifications and improvements to the inventions set forth in our patent application no. GB 0222439.2 filed 27 September 2002. That patent application will be referred to hereinafter as the 'earlier application'.

The term 'coin' will be used herein to include coin-like articles such as
10 tokens, and blanks.

The present invention stems from a need to separate foreign objects from a mass of coins inserted into a machine, often by the public, in order to provide a total value of the coins. Such machines are increasingly being provided in public places, such as supermarkets to enable the public to
15 dispose of their small change.

It should, however, be appreciated that the invention is not restricted to use in such self-service bulk coin counters but may have use in other coin-handling machines in situations where the coins inserted into the machine may have mixed with them foreign objects of various kinds.

20 In the absence of a separation device, the foreign objects are liable to jam the machine, or reduce the efficiency of the machine.

The foreign objects can be of various kinds such as fluff and all manner of items which are found in pockets and purses, such as pencils, buttons and pens, lipsticks etc, in short any item that can get picked up
25 inadvertently with a batch of coins when the coins are loaded into a coin

sorting/counting machine by a member of the public. In an industrial situation, such as a mint, contaminants of various kinds can arise, such as maize, shot and other abrasive and cleaning media.

5 Various types of coin cleaning devices for cleaning a mass of coins, prior to it being processed by a coin processing device, are known.

10 US 5482916 discloses a coin conditioning device comprising a rotatable container, having perforated walls and vanes for causing the mass of coins to be conveyed forward through the container. The described coin conditioning device works like a screw tube conveyor, causing the mass of coins to tumble inside the conveyor, while non-coin matter is allowed to fall out of the container through the perforations in the walls.

WO 96/30877 discloses a similar, rotatable coin cleaning device, wherein the vanes are replaced by a screw conveyor that is arranged inside the perforated container.

15 The present invention stems from some work to provide a coin cleaning device which is fast and which provides an even flow of coins to the components downstream of the coin cleaning device.

20 According to one aspect of the invention of the earlier application a coin cleaning device for separating foreign objects from a mass of coins inserted into the device, comprises a coin receiving means into which a batch of coins may be inserted, an elongate tray assembly, an inlet end of the tray assembly being so arranged as to receive coins from the coin receiving means, a vibration means connected to the tray assembly and so arranged as in use to cause coins on the tray assembly to travel along the
25 tray assembly in the direction away from said inlet end, the tray assembly comprising upper and lower shelves which are substantially

horizontal in use, the upper shelf comprising a first upper shelf portion and a second upper shelf portion, the first upper shelf portion being disposed towards said inlet end, and the second upper shelf portion being disposed away from said inlet end, the first upper shelf portion being

5 perforated by apertures of transverse dimensions smaller than the minimum diameter of coins to be handled by the device, whereby some foreign matter of transverse dimensions smaller than the perforations can fall through the perforations of the first upper shelf portion, the second upper shelf portion being formed with coin receiving apertures of

10 transverse dimensions larger than the maximum diameter of coins to be handled by the device, whereby coins which travel from on top of the first upper shelf portion to the second upper shelf portion fall through said coin-receiving apertures, the lower shelf extending beneath the second upper shelf portion and being provided with perforations of

15 transverse dimensions smaller than the minimum diameter of coins to be handled by the device whereby any foreign objects which are associated with coins that tumble through the apertures of the second upper shelf portion, can pass through the lower shelf, as the coins are conveyed along the lower shelf, and a coin outlet positioned to receive coins from

20 the downstream end of the lower shelf.

Such a device provides two cleaning steps for the coins, the first step being associated with the passage of the coins along the first upper shelf portion, and the second step being associated with the passage of the coins along the lower shelf.

25 According to a second aspect of the invention of the earlier application we provided a coin cleaning device for separating foreign objects from a mass of coins, comprising at least two shelf portions arranged at different heights, vibration means for vibrating the shelf portions to cause coins on

the shelf portions to be conveyed along the shelf portions, said shelf portions each being perforated by apertures of transverse dimensions smaller than the minimum diameter of coins to be handled by the device, whereby foreign matter of transverse dimensions smaller than the perforations can fall through the perforations, the shelf portions being
5 arranged in series with one another, such that coins conveyed along a first of the shelf portions then tumble downwards to lie on the second shelf portion and are then conveyed along the second shelf portion to a coin outlet.

10 According to a third aspect of the invention of the earlier application a coin sorting and/or counting machine was provided with a coin cleaning device in accordance with said first or second aspect of the earlier invention, the coin outlet of the device leading into the coin sorter and/or
15 counter of the machine, which preferably comprises a coin sorter and/or counter of the inclined disc type in which coins to be counted and/or sorted are held in a hopper and are picked out in turn by the disc.

The present invention is concerned with inventive modifications or improvements to said tray assembly.

According to the present invention said elongate tray assembly of the
20 coin cleaning device as set forth in the first or second aspects of the invention of the earlier application comprises an upper tray spaced from a lower tray by a plurality of rigid spacers, each spacer being associated with a respective releasable fastener, the arrangement being such that when the fasteners are in a secured condition the upper tray is rigidly
25 connected to the lower tray by said spacers and fasteners, and when the fasteners are released the upper tray is removable from the lower tray.

The associated spacers and fasteners are preferably located substantially at opposite ends of the upper tray.

The combined mass of the spacers and fasteners at one end of the upper tray can be arranged to be different from the combined mass of the spacers and fasteners at the other end of the upper tray, in order to provide differing vibration characteristics of the tray assembly along the length thereof.

Desirably the combined mass of the spacers and fasteners at the upstream end of the tray assembly is chosen to be greater than the combined mass of the spacers and fasteners of the downstream end. This causes the coins to become more spaced-apart as they proceed along the tray assembly, and thereby helps to avoid a sudden surge of coins reaching the outlet.

The spacers at the downstream end preferably comprise a hollow column, and the fastener extends through the bore of the column.

The spacers at the upstream end are conveniently constituted by a single block which extends transversely across the tray assembly, a plurality of laterally-spaced apart fasteners extending through respective bores provided in the block.

The block can be provided with apertures sized according to the required mass of the block.

The present invention will now be further described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a plan view of an assembled tray assembly in accordance with the present invention;

5 Figure 2 is a side elevation of the assembled tray assembly looking in the direction of the arrow A in Figure 1;

Figure 3 is a section on the line 3-3 of Figure 1;

Figure 4 is a section on the cranked line 4-4 of Figure 1; and

10 Figure 5 is an enlargement, on a scale of 2:1, of the portion of Figure 4 indicated in broken outline by the arrow B.

In the drawings, parts corresponding to those of the illustrated tray assembly of the prior application have been given corresponding reference numerals.

15 As shown in the drawings the tray assembly comprises an upper elongate tray 13 rigidly supported above a lower elongate tray 14 by means of spacers 50, 51. Each tray 13, 14 is of shallow trough shape in transverse section.

20 The spacers 50 at the downstream end of the upper tray 13 are in the form of tubular pillars and are clamped between the undersurface of upper tray 13 and the uppersurface of lower tray 14 by respectively associated screws 52 which extend through the bores of the spacers 50. The screw heads 53 are received in complementary recesses defined in

the upper surface of tray 13 by frusto-conical formations 54 such that the screw heads 53 do not protrude above the base of tray 13.

At the upstream ends of the trays 13 and 14 they are rigidly spaced apart by an oblong-rectangular spacer block 51 which extends transversely
5 across the trays 13, 14 and is provided with three stepped vertical bores 55 to receive respective screws 56 similar to screws 52.

Screws 52 and 56 are threadedly engaged at their lower ends in downwardly projecting tubular bosses 57 pressed from the material of the base of lower tray 14.

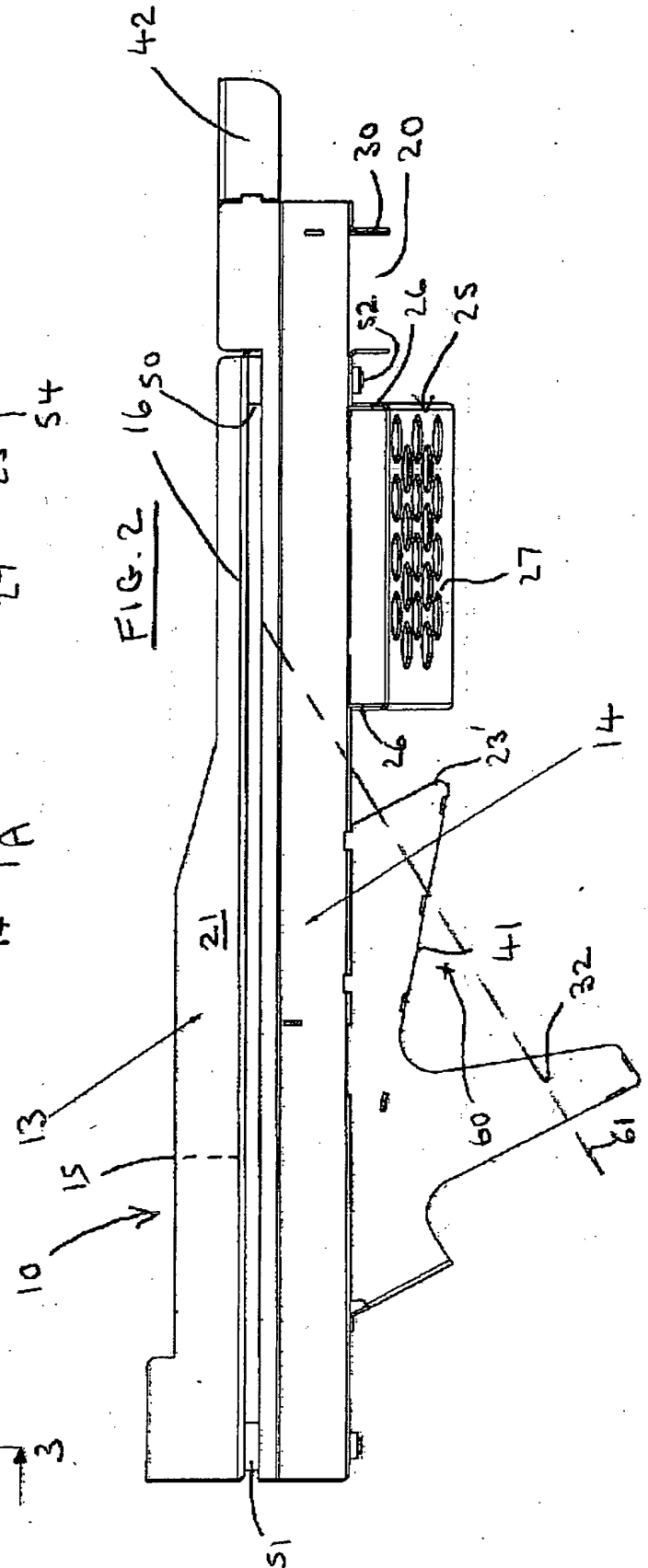
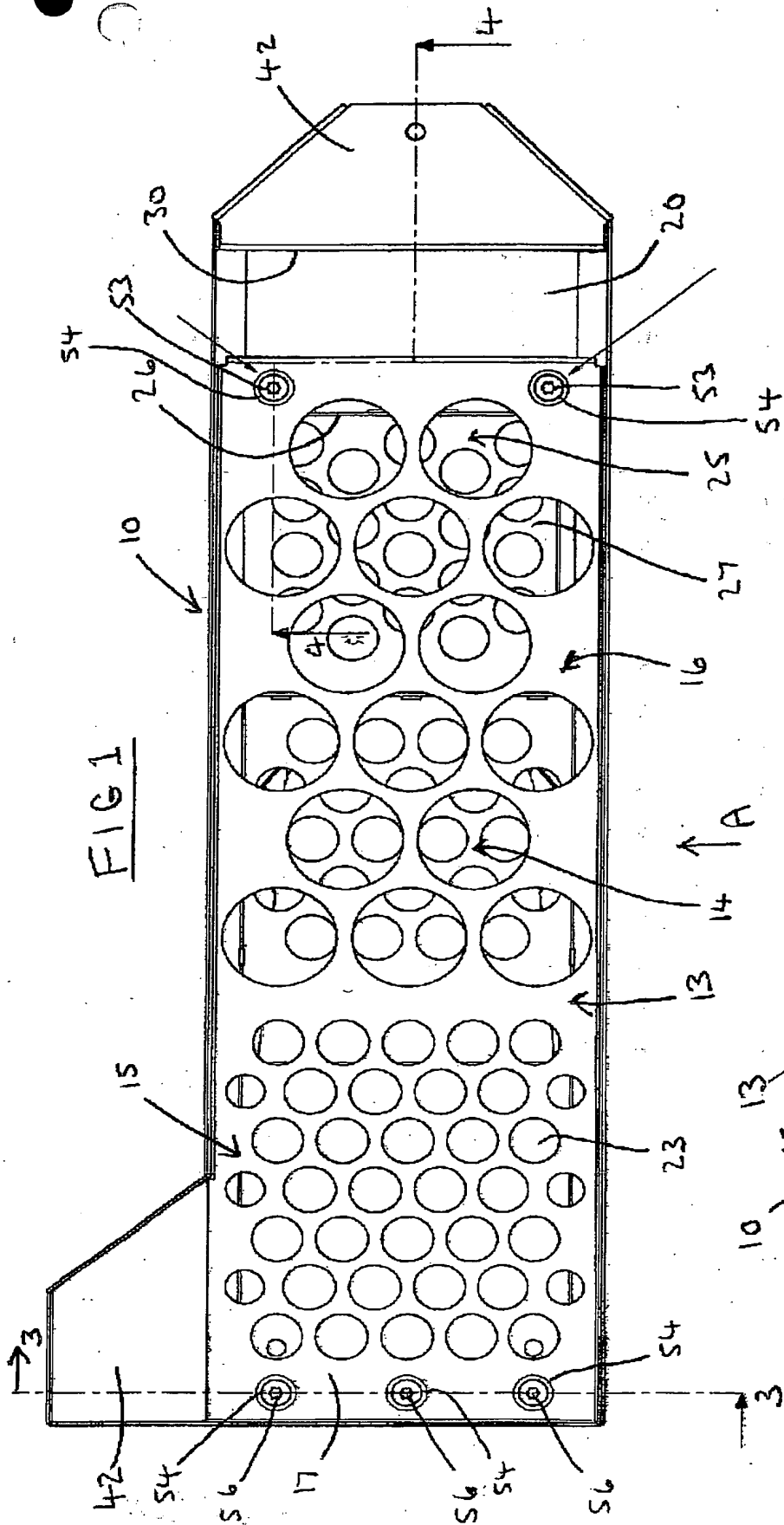
10 A suitable proprietary screw locking material is used to prevent the screws 52 and 56 from vibrating loose in use of the tray assembly.

The relative masses of the spacers 50 and 51 are chosen so as to provide a difference in the vibration characteristics of the trays 13, 14 in proceeding from the upstream end of the trays. In particular, the
15 downstream end of the trays will tend to jump more than the upstream end and will cause the coins to become more spaced apart in the longitudinal direction of the trays, as the coins move along the trays. This is due to the centre of gravity 60, Figure 2, of the tray assembly being located rearwards of the line of action 61 of the vibrator.

20 The ability to disconnect the upper tray from the lower tray enables different trays to be used for handling different ranges of coins, the holes in the trays being chosen according to the diameter of the coins to be handled.

Instead of employing screws as the fasteners, it may be desirable in some
25 cases to employ quick-release clamps.

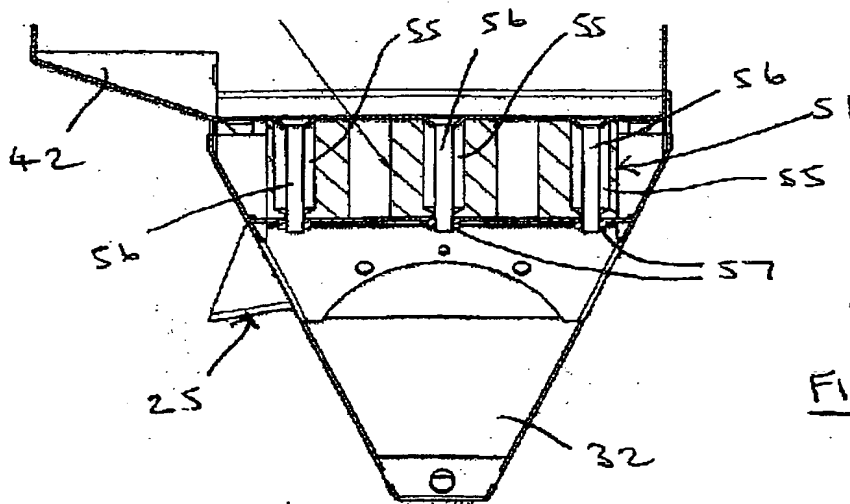
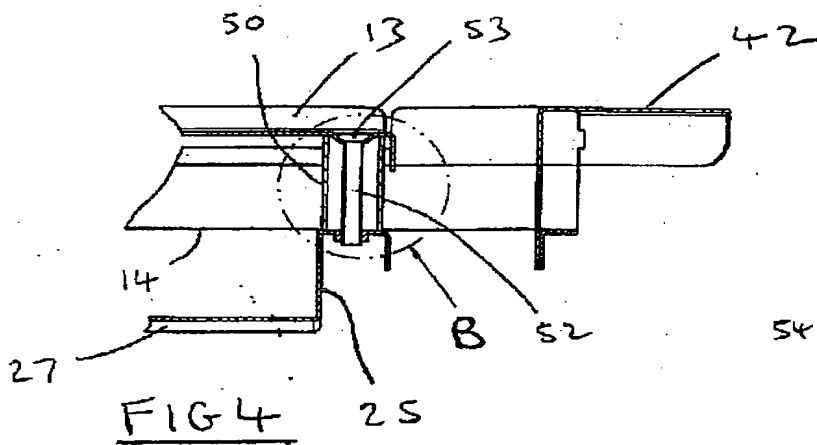
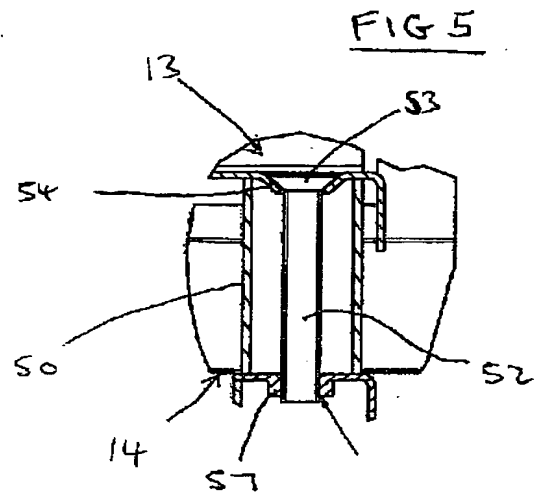
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FIG 3FIG 4FIG 5

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